DOCUMENT RESUME

ED 343 669 PS 020 358

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TITLE Mothers' Retrospections of Premature Childbirth.
PUB DATE 91
NOTE 11p.; Paper presented at the Finno-Hungarian Symposium on Child and Family Research (2nd, Budapest, Hungary, 1991). "Single-spaced typescript."
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Birth; *Emotional Experience; Foreign Countries; Longitudinal Studies; *Memory; *Mothers; Perinatal Influences; *Premature Infants; *Stress Variables
IDENTIFIERS *Hungary; Parent Expectations

ABSTRACT

This study examined Hungarian mothers' recollections, 8 years after the birth of their premature baby, of their stress at the time of the baby's birth. Interviews were conducted with 30 mothers whose babies had been born between 30 and 37 weeks gestational age. At the time of the follow-up, all children had normal IQs and were attending normal schools. Results indicated that more than half the mothers described their emotional state at the time of their infant's birth as considerably distressed. The results were compared to results of an earlier, similar Canadian study. In this study, 10 maternal stress categories were identified, and the sample of babies was divided into well and ill subsamples. Results of the present study differ significantly from results for the Canadian sample as a whole, but correlate with the results for the Canadian well sample, except for the stress category of "worry about developmental prognosis." Results of the current study indicate that maternal stress recollection is related to infants' perinatal risk status, and that high-SES mothers report more stressful memories than low-SES mothers. A list of 26 references is provided. (BC)

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MOTHERS' RETROSPECTIONS OF PREMATURE CHILDBIRTH

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The differential parental behaviours toward prematurely born infants as compared to those toward healthy full-term infants have been extensively documented and discussed in the literature since the 1970's, and the specific features of these parental behaviours are mostly interpreted as responses to the distinct behavioural patterns typical of preterm babies (e.g. Barrera, Rosenbaum, & Cunningham, 1987; Brown & Bakeman, 1980; Goldberg, 1979; Holmes, Reich, & Gyurke, 1989; Macey, Harmon, & Easterbrooks, 1987; Minde, Perrotta, & Marton, 1985; Minde, Perrotta, & Hellmann, 1988; Sameroff, 1986, Sameroff & Fiese, 1990, Stevenson & Leavitt, 1991). The reactive character, however important, cannot sufficiently explain the complexity of parents' attitudes toward preterm children.

The premature birth of a baby is a critical life event for the family, especially for the mother. It violates the positive expectations associated with healthy pregnancy and childbirth. Such an emotional shock is likely to generate predispositions to specific maternal behaviours, hence it is in itself a potential source of differential mother-infant interaction. The stress mothers experience is of a complex nature. Amongst its components there are emotions like disappointment and resentment: the mothers feel disappointed in themselves and even guilty of not having been able to accomplish their task to carry through the child-bearing, and disappointed in the baby who looks very different from what they expected. Another prevailing emotion is the anxiety about the infant's survival as well as about the long-term developmental prognosis. Further components of the stress are the alienation from the infant because of the long separation, and the anticipation of more inconveniences and less rewarding moments related to child-rearing (Blackburn & Lowen, 1985; Harmon & Culp, 1981; Holmes et al., 1989; Pederson, Bento, Chance, Evans, & Fox, 1986; Silcock, 1984; Trause & Kramer, 1983).

In part of the investigations the maternal reactions to preterm childbirth were studied concurrently, i.e. shortly after the event. The issue can be approached also in a retrospective way. Data which are obtained from mothers while they are still at the maternity ward or at least prior to the infant's discharge from the hospital may capture the actual emotional state more accurately, free of distortions. On the other hand, the mothers' retrospective remembrances provide an opportunity to examine these reactions in a developmental perspective, put in the context of various background factors and of the developmental outcome of the child. Convincing evidence has been reported in the literature indicating that the individuals' immediate emotional responses to stressful events are represented in the long-term memory and these memories do not simply decline over time (Affleck, Tenne, Rowe, & Higgins, 1990; Gunn, Lepore, & Outerbridge, 1983; Horowitz, 1983).

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(Presented at the 2nd Finno-Hungarian Symposium on Child and Family Research, Budapest, 1991)

This research has been supported in part by grants from the Secretariat of Research in Public Education (OKKFT Ts-4 - 755) and from the National Scientific Research Funds (OTKA No. 2196), as well as by the National Pediatric Institute.

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The data which are presented here are from an ongoing long-term longitudinal project aiming at the developmental outcome of prematurity (Kalmár, 1990; Kalmár & Boronkai, 1990 and 1991). The subjects of the study are children who were born preterm but at a relatively low risk, since the purpose of the research has been to disentangle the potential sequelae of premature birth from the effects of other perinatal risk factors.

METHOD

The subjects of the present part of the study were 30 mothers. The birthweights of their children ranged from 1120 gm to 2220 gm, mean = 1733 gm; they were born between 30 and 37 weeks gestational age (mean=33.6 weeks). They were singletons and had neither congenital anomalies nor severe perinatal complications.

At the 8-year follow-up the mothers participated in an extensive interview. By that time all the children had finished their first school year. The overall picture of the children's development looked reassuring; their IQ's fell within the normal range, none of them became mentally retarded, and all attended normal school (for details of the sample characteristics and the outcome see Kalmár, 1990; Kalmár & Boronkai, 1990a, 1991). The interview, among other topics, touched upon the mother's memories related to the birth of the target child.

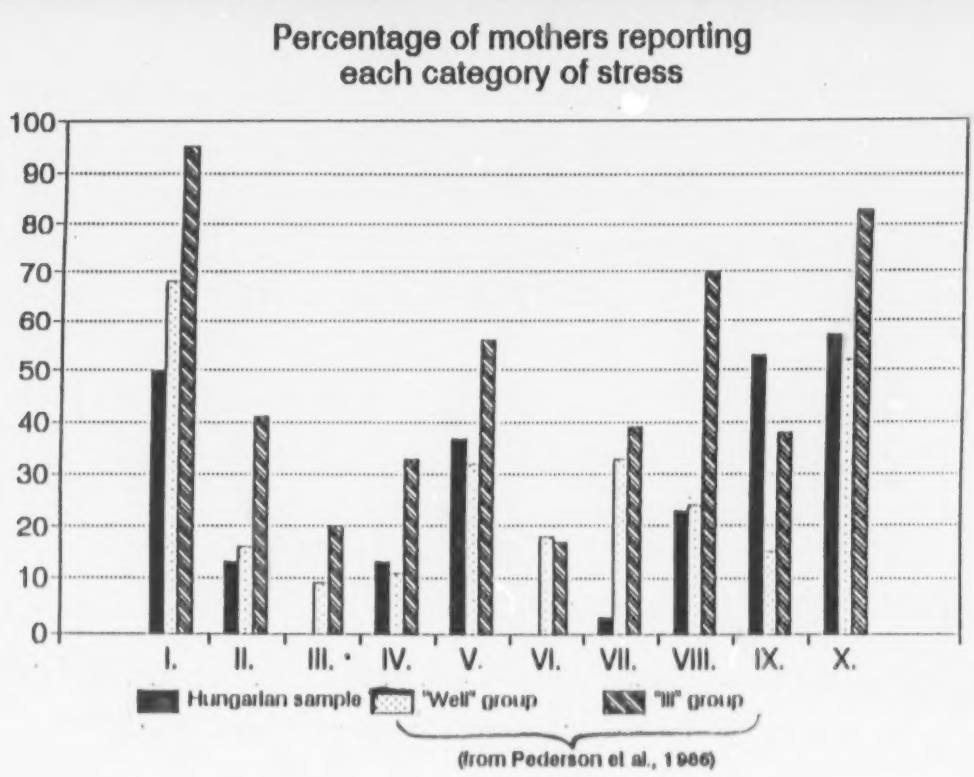
The categories of coding the recalled memories and assigning them to various content areas were based on a study by Pederson et al. (1986) at the University of Western Ontario, Canada (figure 1).

RESULTS AND DISCUSSION

More than 50% of the mothers whom we interviewed, as late as after 8 years, still described their own emotional state following the birth of the premature infant as considerably distressed. The prevalent components of the negative memories were the concerns and fears about the developmental prospects of the child as well as about the difficulties that the mothers had anticipated to encounter in their task to provide care for a fragile baby with special needs. In addition, many mothers recalled a feeling of alienation from the infant separated from them (figure 1).

The use of the stress categories developed by Pederson et al. (1986) provided an opportunity to compare our findings to those reported by the Canadian authors. It is important to note two aspects in which Pederson et al.'s study markedly differed from ours. Firstly, Pederson et al. conducted a concurrent investigation in that the mothers were interviewed a few weeks after the birth of the preterm baby, while their infants were still in the hospital. Secondly, the risk status of the preterm infants as a group in the Canadian study was considerably more severe than that of our subjects since those babies, in contrast to ours, were all treated in a Neonatal Intensive Care Unit.

According to the severity of the infants' medical course Pederson et al. distinguished two subgroups within their sample, labeled "well" and "ill" infants. The perinatal status of their "well" babies certainly comes closer to that of our subjects, therefore the data pertaining to the Canadian "well" group should be primarily taken as reference when assessing our results. The percentages of mothers recalling each of the various content areas of stress 8 years after the event follow a pattern very much like the breakdown of answers given by the mothers of the Canadian "well" infants (figure 1).



	Categories	Chi-square: Hungarian - Canadian "well"	Chi-square: Canadian "well"-"ill"
I.	Emotionally upset	2.13	14.14 **
II.	Crying	0.11	9.06 *
III.	Psychosomatic symptoms	2.78	6.61
IV.	Disappointment	0.06	8.22 *
V.	Alienation from infant	0.22	6.92
VI.	Resentment in being separated from infant	5.94	0
VII.	Inconvenience in visiting	10.24 *	0.25
VIII.	Worries about survival	0.01	40.12 **
IX.	Worries about developmental prognosis	16.29 **	9.40
X.	Concerns about the need for special caregiving	0.17	13.00 **

$p < .05$
$p < .01$

Note: Significances are calculated using the Bonferroni correction for multiple comparisons.

Figure 1

Using Chi-square statistics, remarkably fewer comparisons between the Hungarian sample and the Canadian "well" sample yielded significant Chi-square values than did the comparisons between Pederson et al.'s "well" and "ill" subsamples (two and six, respectively). This finding seems to corroborate the contention about the reliability of the long-term memory of emotional responses to stressful events.

There is one category for which our result is strikingly different from that of the Canadian study. The percentage of Hungarian mothers who reported "concern about long-term prognosis" exceeded not only the respective percentage of Pederson et al.'s "well" group, but that of their "ill" group as well. It may be due to experiences the Hungarian mothers acquired during the later course of their infants' development which may have had a distorting influence in terms of timing the emergence of the recalled worries. In the first weeks the mothers may well have been almost completely preoccupied with the fears about the imminent changes of the baby's condition and with the concerns as to whether they would be able to cope with their difficult care-giving task. In such an acute stress these mothers probably had only a limited capacity to think of the far future. The other significant difference occurred with regard to the "inconvenience in visiting the infant". It was referred to only once in our study, contrary to the substantial proportion (one-third) of the Canadian mothers complaining about such difficulty. The explanation of the difference is likely to be of practical nature. Firstly, our relatively low-risk preterm subjets were hospitalized for shorter periods; secondly, the Hungarian families all lived in Budapest while the Canadian families were from a larger area: some lived as far as 100 kms from the respective hospitals. It should be noted that two content areas of stress which were present in the Canadian mothers' reports were absent in our study. As far as the psychosomatic symptoms are concerned, the substantial difference between Pederson et al.'s "well" and "ill" groups has led us to attribute the lack of such symptoms in the Hungarian mothers to the fairly good perinatal status of their preterm babies. The absence of resentment is likely to be explained by the typical neonatal care arrangements in Hungarian hospitals. As rooming-in is still rare and even healthy full-term newborns are only taken out from the nursery for limited periods of breast feeding, Hungarian mothers are generally prepared to and accept a temporary separation from their infants.

The extent of stress (as measured by the number of stress factors) experienced by the mothers participating in our study is significantly correlated with the perinatal risk status of their infants (Spearman rank correlation $r = 0.69$, $p<.001$) . In the Canadian concurrent investigation the same trend is reflected by the significant comparisons between the "well" and the "ill" subsamples (Pederson et al., 1986), and a similar correlation is reported by Silcock (1984). We have found, however, an interesting interaction between the risk status and the SES. High-SES mothers scored higher on the stress scale than low-SES mothers (Chi-square= 4.82, $p<.05$). (Figure 2 and 3)

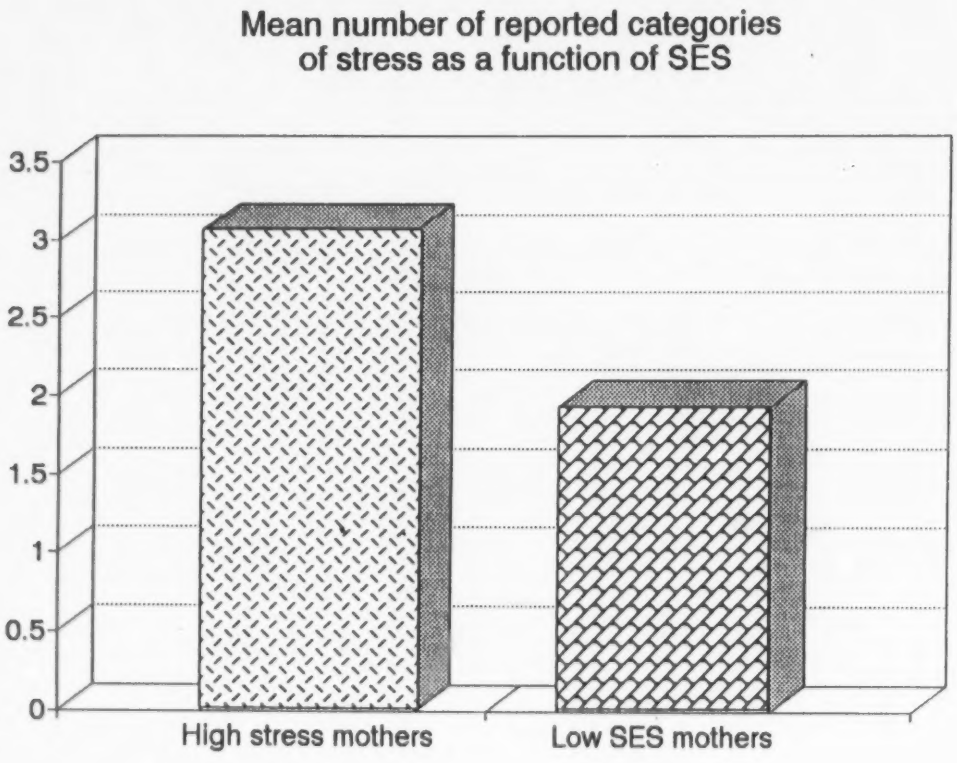
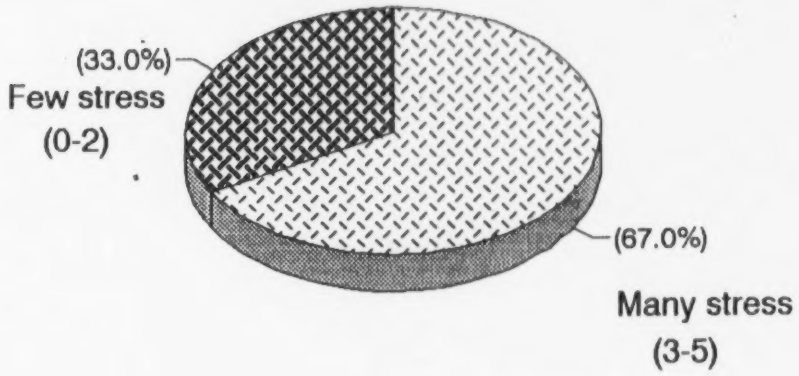


Figure 2

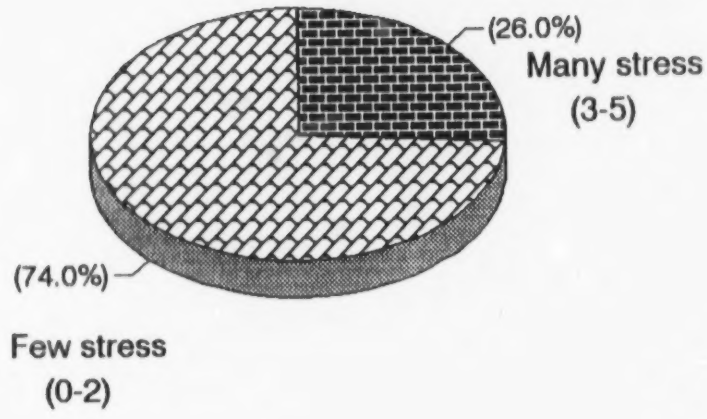
This pattern cannot be accounted for by perinatal variables as neither birth-weight nor other perinatal risk factors discriminated significantly the high-SES and the low-SES subgroups (mean birth-weight 1713 g and 1753 g; mean risk index 4.53 and 4.20, respectively). Note however, that all high-SES mothers who recalled few (0-2) stress content areas had babies born with birth-weights greater than 1500 g and those who mentioned no more than one category had babies heavier than 2 kilograms, while some of the low-SES/few-stress mothers had babies as tiny as not even 1250 g. The same trend applies to the single stress categories: the percentage of high-SES mothers reporting any one of the content areas was higher than the respective pecentage of low-SES mothers (Figure 4). More than twice as many high-SES mothers mentioned an alienation from the infant than low-SES mothers, and while two-third of the high-SES mothers worried about the long-term developmental prognosis, less than half of the low-SES mothers recalled such concerns.

Percentage of mothers reporting
many or few categories of stress
as a function of SES

High SES



Low SES



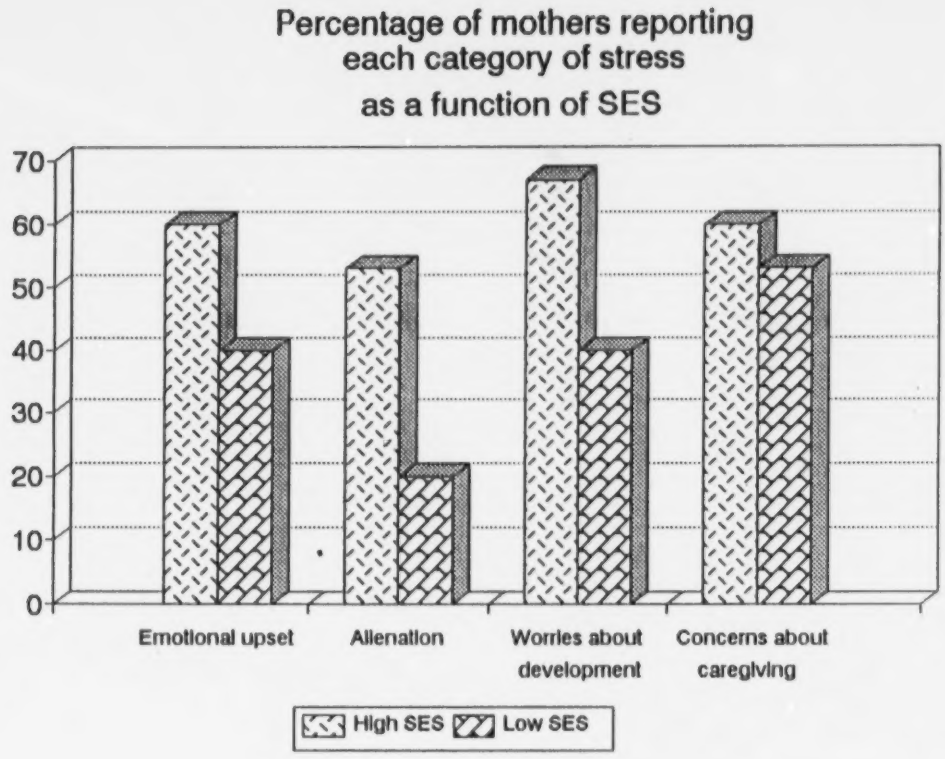


Figure 4

Our data do not enable us to answer the question why low-SES mothers should have fewer stressful memories of premature childbirth. This result may appear to be contrary to expectations based upon the contention that a low-SES family background can offer less potential sources of social support to a mother in a crisis situation than a high-SES environment. Our findings, in line with those of Pederson et al., failed to provide evidence of any direct relationship between the experienced stress and the availability of social support. Thus we can only speculate about the mechanisms underlying the positive correlation between the extent of stress and the SES. The retrospective interview data cannot give valid information about the time the reported memories originated from and we do not know whether the relationship in question had really existed at the time of childbirth. The struggle with everyday problems typical of the life of low-SES families may have contributed to the memories of the mothers pertaining to their children's perinatal period fading away, more than it happened to high-SES mothers. On the other hand, there may be family background factors other than SES to account for this correlation.

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Findigs reported by Affleck et al. (1990) suggest a link between the developmental outcome of the child and the stressful memories recalled by the mother two years after the birth of the child. The above authors refer to mothers who experienced a rise in painful memories related to their children's neonatal period after having learned the diagnosis of a developmental disability. Our sample does not include cases of such disabilities, therefore we have no comparable data. Our results give no indication that the variance within the normal range of the children's performance should directly influence the maternal recollections of stressful memories. We have found a hint, however, that in particular cases such a link may exist after all. It applies to children of low-SES families who at birth weighted less than 2 kilograms. At age seven the children with less stressed mothers (stress categories 0-2) had IQs on the average 5.5 points lower (mean IQ=97.2) than those with more stressed mothers (stress categories 3-5, mean IQ=102.7).

Note that the above direction of correlation between the developmental outcome of the child and the maternal stressful memories is contrary to what has been suggested by the findings of Affleck et al. (1990). While we have to keep in mind that in our sample the variance of IQ was within the normal range, certain results of our follow-up study reported elsewhere (Kalmár & Boronkai, 1990b, 1991) may reveal some latent factors relevant to the above pattern. The results suggest that the amount of stimulation provided by the parents is a particularly powerful contributor to the intellectual outcome of the child, and the correlation is enhanced in prematurely born children as compared to a control sample matched for SES. Family climate also proved to have an effect not explained by SES, both in preterm and term children. The inclusion of the above mentioned variables in the analysis of the interview data on the stressful memories related to the birth of a preterm baby has shed some light on the pattern. Among the low-SES families those with less stressed mothers and lower-IQ children score lower both on the family climate and the intellectual stimulation scales (means: 7.5 and 5.7, respectively) than those with more stressed mothers and higher-IQ children (means: 8.7 and 8.0). We are inclined to venture a speculation that a low involvement in parental role may account for the inadequately little amount of stress recalled by some mothers, notably those of low-SES family background, who had very low-birthweight babies. These mothers may not have been attentive to the specific needs of their risk children and may not have provided enough compensatory stimulation, which in children with more stressed and anxious mothers, who were potentially more involved and striving caretakers, contributed to a better outcome.

To sum up the main findings of our study, as late as 8 years after a preterm delivery, even though the baby was not considered to be at a very high risk, mothers still have stressful memories of that event. The breakdown of the recalled memories into categories reflecting the content of stress (Pederson et al., 1986) does not support the hypothesis about the nature of maternal stress, formulated by some of the pioneers of the research into the effect of premature childbirth on the mothers (Caplan, 1960; Kaplan & Mason, 1960). These authors attributed the negative emotional reactions mainly to feelings of failure, frustration, and disappointment, i.e., to self-centered emotions. The frequencies of the different content areas of stress represented in the mothers' long-term memory can rather be interpreted as evidence of the mothers' preoccupation with their infants' chances of recovery and developmental prospects, as suggested by Klaus and Kennell (1982), Harmon and Culp (1981), and Pederson et al.(1986).

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